DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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March 28, 1995

The Honorable Thomas P. Grumbly
Assistant Secretary for Environmental Management
Department of Energy
Washington, D.C. 20585

Dear Mr. Grumbly:

Enclosed for your information and use is a trip report prepared by our staff on radiation protection and conduct of operations at the Idaho Chemical Processing Plant High Level Waste Tank Farm Upgrade Project at the Idaho National Engineering Laboratory.

The Board's staff found that the lack of a well-defined division of responsibilities between the Department of Energy Idaho Operations Office (DOE-ID) project manager and the DOE-ID facility manager detracted from the coordinated oversight of the project. Additionally, several deficiencies were noted in radiological control practices and in Radiation Work Permit and Construction Safe Work Permit documentation. Mr. Daniel Ogg of the Defense Nuclear Facilities Safety Board staff will be available to provide any additional information you may require.

Sincerely,

John T. Conway
Chairman

c: The Honorable Tara O'Toole, EH-1
Mr. John Wilcynski, Manager, ID Operations Office
Ms. Jill Lytle, EM-30
Mr. Mark Whitaker, EH-9

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 17, 1995

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: Daniel G. Ogg, Program Manager, INEL

SUBJECT: Radiological Controls and Conduct of Operations, Idaho National Engineering Laboratory, High Level Waste Tank Farm Replacement Project, Report of Site Visit, November 30 - December 2, 1994

1. **Purpose:** This memorandum documents the results of the Defense Nuclear Facilities Safety Board (DNFSB) staff visit to the Idaho National Engineering Laboratory (INEL). This trip served as a follow-up to a trip conducted in April 1994 and focused on radiological controls and conduct of operations at the High Level Waste Tank Farm Replacement (HLWTFR) Upgrade Project at the Idaho Chemical Processing Plant (ICPP). The review team included DNFSB staff member Daniel Ogg, and outside expert David Boyd. The April 1994 review was conducted by David Boyd.

2. **Summary:** Observations made in April 1994 are reported, as well as observed changes that have occurred in the ensuing seven-month period. Review activities included briefings by the Department of Energy Idaho Operations Office (DOE-ID) and Lockheed Idaho Technologies Company (LITCO), observations of plan-of-the-day meetings and pre-job briefings, discussions with DOE-ID, LITCO, and Industrial/Amelco (I/A) personnel, document reviews, and tours of the tank farm area. Significant observations include:

   a. DOE-ID management oversight of the HLWTFR Project is adversely affected by the lack of well-defined responsibilities and tasking for the assigned project manager and by the infrequency of his oversight activities. Other DOE management oversight is provided , with varying frequency, by the (1) DOE-ID facility representative assigned to the ICPP waste processing facilities, (2) DOE-ID ICPP facility manager, (3) DOE-ID Office of Policy Assurance representatives, and (4) DOE-EH site representatives.

   b. Radiation Work Permits (RWPs) and Construction Safe Work Permits (CSWPs) from April, October, and November 1994 were examined. Several deficiencies were noted in the October and November records that were similar to those noted in the April records and included omission of stay time requirements even when the work was to be conducted in High Radiation areas, inconsistencies in listed dosimetry and personnel protective clothing requirements, actual contamination levels equal to those that would void the RWP, and lack of reference to a specific RWP in many of the CSWPs.

c. Radiation worker survey practices may not prevent the spread of contamination, as workers are not required to survey upon exit from Contamination and High Contamination Areas, but wait until exiting the buffer area to perform their surveys. Radiological control postings and field documentation on the tank farm were inconsistent and contained mistakes that were not identified and/or corrected by internal reviews. Cleanliness conditions within the radiological work areas and containment tents were poor in some cases.

3. Background: The HLWTFR Project was initiated as the result of a Notice of Noncompliance Consent Order that was signed with the state of Idaho in 1992. The upgrade portion of the project includes the replacement of HLW transfer piping and associated valves, vent and pressure relief piping for the HLW tanks, and the valve box adjacent to the CPP-604 building. Construction began in 1993 and is approximately 40 percent complete. The DNFSB staff and outside experts previously reviewed the HLWTFR Project in March and April 1994.

4. Discussion:

a. DOE-ID Management and Oversight: During both the April and November visits, discussions were held with the DOE-ID project manager for the HLWTFR Project. The project manager works solely on the tank farm project and his duties and activities were not observed to have changed significantly from April to November. As of the most recent staff review, the project was behind schedule and over budget. It was learned that the project manager:

1) Maintains an office in Idaho Falls in addition to an office at the ICPP and visits the ICPP approximately three days per week.

2) Walks-down the tank farm at a frequency of about once per week.

3) Records comments, action items, and observations in a log book but does not routinely submit formal surveillance reports for his tank farm walk-downs and other oversight activities.

4) Does not have clearly defined project duties and responsibilities in the DOE-ID organization. No roles and responsibilities document exists for DOE-ID project manager personnel and their only guidance is the applicable position description.

Additional oversight and weekly surveillances and walk-downs are provided by the facility representative assigned to waste processing activities at the ICPP. Other walk-downs are conducted by the ICPP facility manager, personnel from the DOE-ID Office of Policy Assurance, and personnel from the EH site representative's office.

The DOE-ID facility manager for the ICPP stated that he recognized the need for improved oversight of the tank farm project and that he has requested a review by an independent DOE-ID group to define the overall problem and to recommend corrective action.

b. Radiation Work Permits: RWPs from the months of April, October, and November 1994 were reviewed and several deficiencies were noted. Many of the problems noted were not identified or corrected by internal reviews. In general, the RWPs showed lack of attention to detail and conflicting guidance on dose rates and allowable worker doses. In some cases the RWPs did not provide adequate information to allow workers to minimize their exposure. Specific observations made and deficiencies noted are listed in Attachment A.

c. Construction Safe Work Permits: A review of CSWPs also noted several inconsistencies that had not been identified or corrected by internal reviews. Job descriptions were inadequate, references to RWPs were unclear, and in many cases the work permit did not provide the workers with sufficient information to proceed with the work without stopping to obtain additional information. Attachment A lists specific deficiencies noted during the review of CSWPs.

d. Work Packages: During the November-December 1994 visit, two work packages were reviewed. These work packages were written for demolition and installation work in diversion valve box (DVB) C23. As with the CSWPs, these work packages showed a lack of attention to detail and did not provide specific information about the proper conduct of the work.

e. Walk-downs of the Tank Farm: Walk-downs of the tank farm were conducted in April and again on November 30 and December 1, 1994. Several deficiencies were noted.

Workers who complete work in a valve box and exit the work area do not perform a whole body survey upon exiting, even if they were working in a High Contamination Area. After removal of their protective clothing, the workers put on rubber boots or cotton shoe covers and remain in the Radiological Buffer Area until they are ready to exit the tank farm at which time they perform a whole body frisk in a personnel contamination monitor (PCM-1B). Rubber boots are left on before and after monitoring, but cotton shoe covers are removed after monitoring. This practice does not preclude the spread of beta contamination that may have been picked up on the worker's feet in the change-out area of the valve box tent. Such contamination could remain on the feet, be covered by rubber boots or cotton shoe covers, and escape detection by the PCM-1B.

The reason given for this practice was that background radiation levels were too high to permit a whole body frisk upon exiting the work area. However, neither the RCT or the RCT supervisor could produce a survey that showed radiation levels in the buffer area or

general tank farm area, nor could they cite a requirement to conduct one. No plans were evident for installing shielded survey stations on the tank farm.

Other specific deficiencies noted during the tours are listed in Attachment A.

f. POD Meetings and Pre-job Briefings: Plan-of-the-Day meetings and pre-job briefings were observed. In all cases the meetings were well-attended and held in an orderly fashion. Subjects included results of the previous days work, current scheduled jobs, safety reminders, administrative requirements, and coordination among groups.

Pre-job briefings for workers assigned to each job were conducted by the I/A foreman who was to supervise performance of the work and the LITCO RCT who supported the job. A checklist was used to cover specified items concerning the work procedure and the associated radiological controls necessary.

g. Improvements: Improvements were noted in the administration of airborne activity record sheets and in the training records of construction personnel.

The April review found that the HLWTFR Project Site Health and Safety Plan (SHSP) was deficient in several areas. A new revision to the SHSP has been written and is in the review cycle.

5. **Future Staff Reviews:** Future reviews of the HLWTFR Project are scheduled approximately twice per year through the completion of the project which is scheduled to be finished in June 1996.

1. Radiation Work Permits: The following is a listing of deficiencies noted during reviews of RWPs from April, October, and November 1994.

   a. Section (3) - stay time marked "no" when entry into a High Radiation Area was required for the job. For example, one RWP listed the general area radiation levels as 400 mR/hr and the allowable dose to the worker as 300 mR, but no stay time was identified.

   b. Section (4) - intermittent radiological control technician (RCT) coverage specified when the job required entering a valve box. Attachment F-4 specifies full-time RCT coverage for valve box entry.

   c. Sections (7) and (10) - contamination levels that would void the RWP were recorded as actual contamination levels. In one case, 100,000 dpm/100cm^2 was recorded in both sections, yet the RWP was still approved.

   d. Section (9) and (6) - inconsistencies between general area radiation levels, allowed dose, and limiting dosimeter reading.

   e. Sections (9) and (10) - location not specified when maximum localized contamination level is recorded.

   f. Section (11) - "Other Dosimeter" block not filled in, although all site personnel wear a thermoluminescent dosimeter (TLD).

2. Construction Safe Work Permits: Deficiencies noted in CSWPs are listed below:

   a. Section I - name of the I/A construction superintendent entered instead of the job supervisor as specified in Attachment M to Subcontract No. S-295109 Special Conditions.

   b. Section I - specific job location and detailed job descriptions are not always entered. For example, job location is usually described as "CPP tank farm" without including a valve box number or other information.

   c. Section II - parts 6 and 7, which specify radiological conditions, are either left blank or filled in with "see RWP" without reference to a specific RWP.

3. Work Packages: During the November-December 1994 review, work packages DEM-DVB-C23-4 and INST-DVB-C23-157 were reviewed. The following observations were made:

a. Radiological control change sheet DEM-DVB-C23-4 #01 dated July 27, 1994, made five changes in the sequence of work procedure steps. These changes were not incorporated in the procedure and may have introduced confusion in performing the work.

b. Radiological control hold points in work procedures were not signed off. Reportedly, this was in accordance with policy.

c. Work package DEM-DVB-C23-4 had steps 2 and 3 not signed off as complete, but steps following in numerical sequence were signed off. A note on the process sheet states that numerical steps are to be completed in sequence.

d. Work package INST-DVB-C23-157, steps 11G and 11H lacked technical direction for installation of temporary valve handles and valve identification labels.

4. Tank Farm Walk-down: Additional observations from walk-downs of the tank farm included:

a. Radiological control caution postings near the C40 valve box excavation site state "Do not enter" but do not provide information about the associated hazard.

b. A posting at the CPP-1672 exit from the tank farm states that a survey of hands and feet is the minimum required survey. This is inconsistent with the requirement that all personnel exiting the tank farm self-survey in the PCM-1B.

c. Several protective clothing doffing areas do not have posted doffing instructions.

d. In one location, a Radiation Area posting was changed by hand to read "High Radiation Area." No radiation levels were listed. Radiation levels were entered inconsistently on many postings throughout the project.

e. The containment tent inspection checklist for valve box C16 on December 1, 1994, had a green approved sticker, but the inspection sheet was not completed to indicate that an inspection had been done.

f. Housekeeping in containment tents is uneven. Some tents are satisfactory while others had overfilled protective clothing containers, and adrift tools, material, hoses and electrical leads.

g. Copies of expired and superseded documentation were noted in holders on containment tents.